

CLAIMS

1. A soft magnetic material comprising a composite magnetic particle (30) and an organic substance (40), said composite magnetic particle (30) having a metallic magnetic particle (10) and a coating layer (20) coating said metallic magnetic particle (10) and containing an oxide therein,

wherein said organic substance (40) is formed by adding at least one of a thermoplastic resin and a higher fatty acid to a non-thermoplastic resin, and

said organic substance (40) is contained in said soft magnetic material by not less than 0.001% by mass and not more than 0.2% by mass.

2. The soft magnetic material according to claim 1, wherein said thermoplastic resin is one of a fluorine-type resin, a thermoplastic polyimide, a thermoplastic polyamide, and a thermoplastic polyamideimide.

3. The soft magnetic material according to claim 1, wherein said higher fatty acid is zinc stearate.

4. The soft magnetic material according to claim 1, wherein a magnetic flux density is not less than 1.4 (tesla) and a resistivity is not less than 1000 ($\mu\Omega\text{cm}$) when a magnetic field of 8.0×10^3 (A/m) is applied.

5. The soft magnetic material according to claim 1, wherein said non-thermoplastic resin is a wholly aromatic polyimide using biphenyl tetracarboxylic dianhydride.

6. A motor core using an iron core made of the soft magnetic material according to claim 1.

7. A transformer core using an iron core made of the soft magnetic material according to claim 1.

5 8. A method of manufacturing a soft magnetic material comprising a composite magnetic particle (30) and an organic substance (40), said composite magnetic particle (30) having a metallic magnetic particle (10) and a coating layer (20) coating said metallic magnetic particle (10) and containing an oxide therein, the method comprising the steps of:

10 mixing said organic substance (40) and said composite magnetic particle (30) such that said organic substance (40) formed by adding at least one of a thermoplastic resin and a higher fatty acid to a non-thermoplastic resin is contained in said soft magnetic material by not less than 0.001% by mass and not more than 0.2% by mass,

 compression molding mixed powder obtained by the step of mixing, and
15 after the step of compression molding said mixed powder, subjecting said soft magnetic material to stabilizing heat treatment at a temperature of not less than 200°C and not more than a thermal decomposition temperature of said non-thermoplastic resin.

20 9. The method of manufacturing a soft magnetic material according to claim 8, wherein the step of subjecting said soft magnetic material to stabilizing heat treatment includes the step of subjecting said soft magnetic material to stabilizing heat treatment in an atmosphere of one of an inert gas and a reduced gas.

25 10. The method of manufacturing a soft magnetic material according to claim 8, wherein said organic substance (40) contained in the soft magnetic material has a grain size of not less than 0.1 μm and not more than 100 μm .

11. The method of manufacturing a soft magnetic material according to claim 8,

wherein the step of compression molding said mixed powder includes the step of compression molding said mixed powder in an atmosphere of one of an inert gas and a reduced gas.